

Health Management

Diabetes touches every part of your life. It's a serious, lifelong condition, but there's a lot that can be done to protect your health. You can take charge of your health--not only for today, but for the coming years.

Diabetes can cause health problems over time. It can hurt your eyes, your kidneys, and your nerves. It can lead to problems with the blood flow in your body. Even your teeth and gums can be harmed. Many of these problems don't have to happen.

The more you know about diabetes and managing the disease, the better you are able to spot early warning signs and get the medical attention needed to successfully care for diabetes. A person's ability to monitor their own care on a daily basis makes a significant difference in controlling the condition and avoiding potentially serious complications. Taking care of diabetes is a team effort between you and your health care provider team (doctor, diabetes nurse educator, diabetes dietitian educator, pharmacist, school nurse and others). You are the most important member of the team. Take charge of your diabetes care by learning what to do for good diabetes care.

EYE PROBLEMS

Diabetic eye disease (also called diabetic retinopathy) is a serious problem that can lead to loss of sight. There's a lot you can do to take charge and prevent such problems. A recent study showed that keeping your blood glucose closer to normal can prevent or delay the onset of diabetic eye disease. Keeping your blood glucose under control is also important. Finding and treating eye problems early can help save your sight.

Even if you're seeing fine, you need regular, complete eye exams to protect your sight. You should have a dilated eye exam once a year. If you haven't already had a complete eye exam, you should have one now if any of these conditions apply to you:

1. You've had type 1 diabetes for more than 5 years.
2. You have type 2 diabetes.
3. You're going through puberty and you have diabetes.
4. You're pregnant and you have diabetes.

ORAL HEALTH

Because of high blood glucose, people with diabetes are more likely to have problems with their teeth and gums. There's a lot you can do to take charge and prevent these problems. Caring for your teeth and gums every day can help keep them healthy. Keeping your blood glucose under control is also important. Regular, complete dental care helps prevent dental disease.

1. Keep your blood glucose in control.
2. Brush your teeth at least twice a day and get a new toothbrush every 3 months.
3. Floss your teeth daily.
4. Get regular dental care. Have your teeth cleaned at least every 6 months and have a full dental exam once a year.

FOOT PROBLEMS

Nerve damage, circulation problems, and infections can cause serious foot problems for people with diabetes. There's a lot you can do to prevent problems with your feet.

Controlling your blood glucose and not smoking or using tobacco can help protect your feet. You can also take some simple safeguards each day to care for and protect your feet. Measures like these have prevented many amputations.

Signs of Foot Problems

Your feet may tingle, burn or hurt. You may not be able to feel touch, heat, or cold very well. The shape of your feet can change over time. There may even be changes in the color and temperatures of your feet. Some people lose hair on their toes, feet, and lower legs. The skin on your feet may be dry and cracked. Toenails may turn thick and yellow. Fungus infections can grow between your toes. Blisters, sores, ulcers, infected corns, and ingrown toenails need to be seen by your health care provider or foot doctor (podiatrist) right away.

Protect Your Feet with the following:

1. Get your health care provider to check your feet at least four times a year.
2. Check your feet each day.
3. Wash your feet daily.
4. Trim your toenails carefully.
5. Treat corns and calluses gently.
6. Protect your feet from heat and cold.
7. Wear shoes and socks ALWAYS.
8. Be physically active.

BLOOD PRESSURE CONTROL

Normal blood pressure will help prevent damage to your eyes, kidneys, heart, and blood vessels. Blood pressure should be measured at every routine diabetes visit. Epidemiologic analyses show that blood pressures >120/80 mmHg are associated

with increased cardiovascular event rates and mortality in persons with diabetes. Therefore, a target blood pressure goal of <130/80 mmHg is reasonable if it can be safely achieved.

IMMUNIZATIONS

If you have diabetes, take extra care to keep up-to-date on your vaccinations (also called immunizations). Vaccines can prevent illnesses that can be very serious for people with diabetes.

1. Influenza (often called the “flu”) is not just a bad cold. It’s a serious illness that can lead to pneumonia and even death. You can help keep yourself from getting the flu by getting a flu shot every year. The best time to get a flu shot is between October and mid-November, but you can still get your flu vaccination even as late as January.
2. Pneumococcal (pneumonia) disease is a major source of illness and death. It can cause serious infections of the lung (pneumonia), the blood (bacteremia), and the covering of the brain (meningitis). Pneumococcal polysaccharide vaccine (often called PPV) can help prevent this disease. PPV can be given anytime throughout the year and usually is a one-time vaccination unless you have a chronic illness.

Standards of Clinical Care for Children

The following table outlines the type of care children should receive. Very young kids won't need everything (such as eye exams), but older kids, especially teens, likely will. Remember, this is only a guideline.

Care or Service	How Often
Visit with a doctor	Every 3-4 months
Visit with a dietitian	Every 3-4 months
Visit with a diabetes educator	Every 3-4 months
Blood glucose testing	Before meals and at bedtime, at a minimum. The more you test, the better you'll do.
A1C test	Every 3 months
Eye check for retinopathy	Yearly in children 12 or older who have had diabetes for at least five years
Urine test for microalbuminuria	Yearly after five years of diabetes or after puberty
Lipid profile (cholesterol and triglycerides)	Yearly
Height and weight measurements	Every visit
Thyroid functioning	Yearly

For More Information

- "Standards of Medical Care for Patients With Diabetes Mellitus" by the American Diabetes Association.
- "Clinical Practice Recommendations (2002)" of the American Diabetes Association.
- "How to Apply the Experience from the Diabetes Control and Complications Trial to Children and Adolescents?" by Stuart J. Brink discusses the importance of good control in children and adolescents and explains the clinical practices of the New England Diabetes and Endocrinology Center.
- "Medical Guidelines for the Management of Diabetes Mellitus" by the American Association of Clinical Endocrinologists
- "Diabetes Monitor" advises when to refer to an endocrinologist.

References

1. *Understanding Insulin-Dependent Diabetes, 8th Edition* by H. Peter Chase, M.D., 1995, pp. 188-9.
2. *Management of Diabetes Mellitus: Perspectives of Care Across the Life Span* edited by Debra Haire-Joshu, MSED, MSN, PhD, RN., St. Louis, 1992, pp. 629-30.
3. *The Joslin Guide to Diabetes* by Richard S. Beaser, M.D., with Joan V.C. Hill, R.D., C.D.E., pg. 30.

Source: Children With Diabetes web site at http://www.childrenwithdiabetes.com/index_cwd.htm

Sick Day Rules

Illness is a stress that can lead to poor glucose control in both type 1 and type 2 diabetes. It can frequently lead to ketoacidosis in type 1 diabetes. When a patient is ill, changes in diet, medications, and monitoring may be necessary to maintain stability. The following guidelines are recommended during periods of illness.

I. MEDICATION

- A. Patient must continue to take routine insulin (even if vomiting and unable to eat) or oral diabetes medication; may be necessary to switch to insulin temporarily or to change dose, but this is based on glucose test results and on advice from health care provider.
- B. Patients taking insulin may require supplemental regular/rapid acting insulin every 3-4 hours based on glucose results and advice of health care provider.

II. MONITORING

- A. **Blood Glucose:** should be tested at least every 2-4 hours; fingerstick measurements may not be reliable when glucose >400 mg/dl (>22.2 mol/l).
- B. **Urine Ketones:** if glucose >240 mg/dl (>13.3 mmol/l), urine should be tested for ketones every 2-3 hours; patient should report moderate to large ketone levels to health care provider.

III. NUTRITION

- A. **Fluid Replacement:** To prevent dehydration, which may be related to fever, diarrhea, nausea, and vomiting, at least 4-8 oz water or other fluids (caffeine-free, sugar-free drinks such as broth, tea, water, diet soda) should be consumed

hourly, for a total of 8-10 cups of liquid a day. Broth is good for replacement of salt lost with dehydration. When regular meals cannot be consumed, carbohydrates in meals should be replaced with fluids or soft foods. If the individual is nauseated or vomiting, small sips of fluids or ice chips should be taken every 15-20 minute. An antiemetic is often required.

Examples of fluids containing 10-15 grams carbohydrate:

- 1 cup soup*
- 3/4 cup cream soup made with milk
- 1 cup Gatorade
- 1/2 cup fruit juice
- 3/4 cup regular ginger ale
- 1/2 cup regular soda

If blood glucose is >240 mg/dl, choose mostly sugar free liquids like water, diet soda, sugar free popsicles®, sugar free gelatin, tea, or broth.

Because caffeine acts as a diuretic, the fluids consumed should be caffeine-free

- B. **Meal Replacement:** When patient is again able to consume food, small, frequent meals containing 10-15 grams of carbohydrates can be taken every 1-2 hours.

Examples of food containing 10-15 grams of carbohydrates:

- 1/2 cup sweetened gelatin
- 1/2 cup mashed potatoes
- 1 slice toast/bread
- 1 *regular* double popsicle

*Soup made with broth does not contain carbohydrate and should not be used to treat a low blood glucose reaction.

- 1/2 cup *regular* pudding
- 3 graham crackers
- 1/2 cup sherbet
- 1/2 cup custard
- 6 vanilla wafers
- 1/2 cup ice cream
- 1/2 cup cooked cereal
- 6 saltine crackers

IV. WHAT HEALTH CARE PROVIDERS SHOULD ASK PATIENT WHEN PATIENT IS ILL

- A. **Length of illness**
- B. **Glucose and urine ketone levels:**
>240 mg/dl [13.3 mmol/l] and moderate to large ketone level)
- C. **Presence and duration of diarrhea, nausea, or vomiting** (>4 hours)
- D. **Change in body weight since onset of illness**
- E. **Any other symptoms** (e.g., abdominal pain)
- F. **Fever** (>101°F)
- G. **Medications** (dose, times of insulin injections, injection sites, and other medications taken)
- H. **Quantity and kinds of food and fluids consumed during day**

V. USE OF INSULIN PUMPS WHEN SICK

Illnesses are treated slightly different when the patient is using an insulin pump. What needs to be done is dependant on the current blood sugar level. The following are some general guidelines for illness management.

- A. During **ALL** illnesses, blood sugar may be harder to control, so there is a need to test blood sugar more often to maintain good control.
- B. It is important to **ALWAYS** keep some sources of quick sugar available. These will be helpful during sick days if blood sugar is running on the lower side. Regular popsicles and lollipops are suggested (not the sugar-free kind).

Adapted from: "The Diabetes Ready-Reference Guide for Health Professionals". 2000. American Diabetes Association, Inc. Department of Health and Senior Services , *Missouri Diet Manual*, 9th Edition, 2003.

Depression and Diabetes

Just about every child with diabetes feels emotional pain when he or she is diagnosed. This pain is likely to resurface when having diabetes makes it hard to just be a kid. As a result, the children who continue to have the greatest emotional pain from having diabetes often have the most trouble taking care of themselves and controlling their diabetes. This only further fuels their anger, fear, and resentment and can result in even more deeply rooted and lasting emotional turmoil.¹

Signs and Symptoms²

If the student is having any of these problems, it's VERY important to have them talk to their parent, teacher, or other adult:

- Poor grades in school
- A lot of tardiness or absences from school
- Aches and pains that keep the student from doing what he/she wants to do
- Poor concentration
- Being bored
- Loss of interest in friends, sports, or activities
- Difficulty with relationships
- Crying and sleeping all of the time.
- Talk of or efforts to run away from home
- Feelings of sadness or hopelessness
- Increased irritability, anger, or hostility

- Extreme sensitivity to rejection or failure
- Changes in appetite
- Alcohol or substance abuse
- Reckless behavior
- Fear of death
- Thoughts of suicide

Frequency of Depression in Diabetes

- 33% of those with diabetes (type 1 or type 2) experience depression at some point in their lifetime.
- This rate is two to three times higher than that of the general population.
- Depression tends NOT to go away without proper treatment.

Impact of Depression in Diabetes

Depression is associated with:

- Higher risk of disease complications
- Poor blood sugar control

And with other factors that may worsen diabetes:

- Obesity
- Physical inactivity
- Noncompliance
- Substance abuse
- Smoking

Recognizing Depression³

The diagnosis of clinical depression requires that nearly every day for at least two weeks:

ONE of the following is present:

- Sustained feeling of sadness, depression, or extreme irritability.
- Loss of interest or pleasure in activities the student previously enjoyed

PLUS

FOUR of the following:

- A change in sleep patterns
- Increased or decreased appetite (With children it is important to note any failure in expected weight gain.)
- Difficulty concentrating
- Fatigue or loss of energy
- Feelings of guilt or worthlessness
- Recurrent thoughts of death or self-harm

References:

1. Wysocki, T, 1997, *The ten keys to helping your child grow up with diabetes.* American Diabetes Association
2. Betschart J & Thom S. 1995. *In control: A guide for teens with diabetes.* American Diabetes Association.
3. *Depression in Children & Adolescents – A Fact Sheet for Physicians.* www.nimh.nih.gov/publicat/depchildresfact.cfm National Institute of Mental Health, NIH publication No. 004744, 2000.

Source: *Depression & Diabetes*, Center for the Study of Depression in Diabetes at Washington University School of Medicine, St. Louis, Missouri